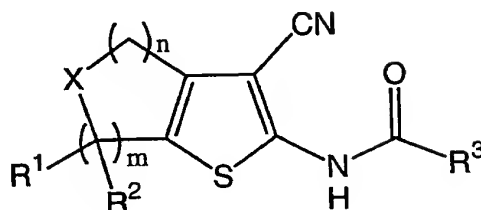


WHAT IS CLAIMED IS:

1. A compound represented by formula I:



- 5 or a pharmaceutically acceptable salt or solvate thereof wherein:

X is NR⁴ or CR⁵R⁶;

- 10 R¹ is selected from the group consisting of: H, C₁₋₁₀alkyl, C₃₋₇cycloalkyl and Aryl, said alkyl, cycloalkyl and Aryl being optionally substituted with 1-4 substituents independently selected from R¹³;

R² is selected from the group consisting of: R¹ as defined above, -C(O)₂R⁷ and -CONR⁷R⁸;

15

m and n are selected from 0, 1, 2 and 3, such that the sum of m and n is 2 or 3, and when m is greater than 1, no more than one R¹ and no more than one R² can be other than H;

- 20 R³ is selected from the group consisting of: C₁₋₁₀alkyl, C₃₋₇cycloalkyl and Aryl, said alkyl, cycloalkyl and Aryl being optionally substituted with 1-4 substituents selected from R¹³, such that when R³ represents C₁₋₁₀ alkyl substituted with one R¹³ group, and R¹³ represents halo, R¹, R², R⁵ and R⁶ do not represent C₁₋₃alkyl;

- 25 R⁴ is selected from the group consisting of: C₃₋₁₀ alkyl, C₃₋₇ cycloalkyl, Aryl, HAR, Hetcy, C(O)C₅₋₁₀ alkyl, C(O)C₃₋₇ cycloalkyl, C(O)-Aryl, C(O)-HAR, C(O)-Hetcy, CONR⁹R¹⁰, CO₂R⁹ and SO₂R⁹, the alkyl, cycloalkyl, Aryl, HAR and Hetcy groups and portions being optionally substituted with 1-4 substituents selected from R¹³;

one of R⁵ and R⁶ is selected from the group consisting of NR¹¹R¹², NR¹¹COR¹²,

$\text{NR}^{11}\text{CO}_2\text{R}^{12}$ and $\text{NR}^{11}\text{S}(\text{O})_2\text{R}^{12}$, and the other represents R^1 , HAR, Hetcy or OR^{11} , said HAR and Hetcy being optionally substituted with 1-4 substituents selected from R^{13} ,

R^7 , R^{10} and R^{11} are selected from the group consisting of: R^1 as defined above,
 5 HAR and Hetcy, said HAR and Hetcy being optionally substituted with 1-4 substituents selected from R^{13} ;

R^8 , R^9 and R^{12} are selected from the group consisting of: C_{1-10} alkyl, C_{3-7} cycloalkyl, Aryl, HAR and Hetcy, said alkyl, cycloalkyl, Aryl, HAR and Hetcy being optionally
 10 substituted with 1-4 substituents selected from R^{13} ;
 or alternatively, R^7 , R^8 , R^9 and R^{10} are as defined above, and R^{11} and R^{12} are taken together with the atoms to which they are attached along with any intervening atoms and represent a 5-8 membered ring optionally containing 1-2 heteroatoms selected from O, S and N, and optionally substituted with 1-4 substituents selected from R^{13} ;

15 each R^{13} is selected from the group consisting of: halo, $\text{NR}^{14}\text{R}^{15}$, C_{1-4} alkyl, C_{3-7} cycloalkyl, Aryl, HAR, Hetcy, CF_3 , OCF_3 , OR^{15} , NO_2 , $\text{S}(\text{O})_x\text{R}^{14}$, SR^{14} , $\text{S}(\text{O})_x\text{NR}^{14}\text{R}^{15}$,
 $\text{O}(\text{CR}^{16}\text{R}^{17})_y\text{NR}^{14}\text{R}^{15}$, $\text{C}(\text{O})\text{R}^{14}$, CO_2R^{15} ,
 $\text{CO}_2(\text{CR}^{16}\text{R}^{17})_y\text{CONR}^{14}\text{R}^{15}$, $\text{OC}(\text{O})\text{R}^{14}$, CN, $\text{C}(\text{O})\text{NR}^{14}\text{R}^{15}$, $\text{NR}^{15}\text{C}(\text{O})\text{R}^{14}$,
 20 $\text{NR}^{15}\text{C}(\text{O})\text{OR}^{14}$, $\text{NR}^{15}\text{C}(\text{O})\text{NR}^{16}\text{R}^{14}$ and $\text{CR}^{15}(\text{N-OR}^{14})$, wherein x is 1 or 2, and y is an integer from 1-4,

said alkyl, cycloalkyl, Aryl, HAR and Hetcy being optionally substituted with 1-4 substituents selected from R^{18} ;

25 R^{14} , R^{15} , R^{16} and R^{17} are independently selected from the group consisting of: H, C_{1-10} alkyl, C_{3-7} cycloalkyl, Aryl and Ar- C_{1-10} alkyl;

and each R^{18} is independently selected from the group consisting of: halogen, CN, C_{1-4} alkyl, OH, CF_3 , Aryl, Aryloxy, CO_2H and $\text{CO}_2\text{C}_{1-4}$ alkyl, said Aryl and the Aryl portion
 30 of Aryloxy being optionally substituted with up to 4 halo groups, and up to 2 C_{1-4} alkyl, OH, CF_3 or CN groups.

2. A compound in accordance with claim 1 wherein R^1 is selected from the group consisting of: H, C_{1-10} alkyl, C_{3-6} cycloalkyl and phenyl, said alkyl and phenyl being optionally
 35 substituted with 1-3 substituents selected from R^{13} .

3. A compound in accordance with claim 1 wherein R^2 is H.
4. A compound in accordance with claim 1 wherein m is 0 and n is 2 or 3, or m is 1
5 and n is 1 or 2, such that the sum of m and n is 2 or 3.
5. A compound in accordance with claim 1 wherein R^3 is C_{3-10} alkyl optionally substituted with 1-4 substituents selected from R^{13} , such that when R^3 is substituted with one R^{13} group, and R^{13} represents halo, R^1 , R^2 , R^5 and R^6 do not represent C_{1-3} alkyl.
- 10 6. A compound in accordance with claim 5 wherein R^3 represents C_{3-5} alkyl, optionally substituted with 1-4 R^{13} groups.
- 15 7. A compound in accordance with claim 1 wherein R^4 is selected from the group consisting of: C_{5-10} alkyl, C_{3-6} cycloalkyl, phenyl, HAR, Hetcy, $C(O)C_{5-10}$ alkyl, $C(O)C_{3-6}$ cycloalkyl and CO_2R^9 , the alkyl, cycloalkyl and Aryl groups and portions, phenyl, HAR and Hetcy being optionally substituted with 1-4 substituents selected from R^{13} , and R^9 representing C_{1-10} alkyl, C_{3-7} cycloalkyl, Aryl, HAR or Hetcy, said alkyl, cycloalkyl, Aryl groups and portions, HAR and Hetcy being optionally substituted with 1-4 R^{13} groups.
- 20 8. A compound in accordance with claim 1 wherein X represents CR^5R^6 , R^5 is $NR^{11}R^{12}$, and R^6 is selected from the group consisting of: R^1 , HAR, Hetcy and OR^{11} ; wherein R^1 is as originally defined, R^{11} is R^1 or HAR, and R^{12} is C_{1-6} alkyl, Aryl or HAR, said Aryl and HAR being optionally substituted with 1-4 R^{13} groups,
25 or R^{11} and R^{12} are taken in combination with the atom to which they are attached and represent a 5-6 membered ring optionally substituted with 1-2 R^{13} groups.
9. A compound in accordance with claim 1 wherein R^{13} is selected from the group consisting of: halo, C_{1-4} alkyl, C_{3-7} cycloalkyl, Aryl, HAR, Hetcy, and OR^{15} wherein R^{15} is H,
30 said alkyl, cycloalkyl, Aryl, HAR and Hetcy being optionally substituted with 1-4 substituents selected from R^{18} and
 R^{18} is halo, C_{1-4} alkyl, Aryl or CO_2C_{1-4} alkyl.
10. A compound in accordance with claim 1 wherein:
35 R^1 is selected from the group consisting of: H, C_{1-10} alkyl, C_{3-6} cycloalkyl and

phenyl, said alkyl and phenyl being optionally substituted with 1-3 substituents selected from R^{13} ;

R^2 is H;

m is 0 and n is 2 or 3, or m is 1 and n is 1 or 2, such that the sum of m and n is 2

5 or 3;

R^3 is C_{3-10} alkyl optionally substituted with 1-4 substituents selected from R^{13} , such that when R^3 is substituted with one R^{13} group, and R^{13} represents halo, R^1 , R^2 , R^5 and R^6 do not represent C_{1-3} alkyl;

10 R^4 is selected from the group consisting of: C_{5-10} alkyl, C_{3-6} cycloalkyl, phenyl, HAR, Hetcy, $C(O)C_{5-10}$ alkyl, $C(O)C_{3-6}$ cycloalkyl and CO_2R^9 , the alkyl, cycloalkyl and, Aryl groups and portions, phenyl, HAR and Hetcy being optionally substituted with 1-4 substituents selected from R^{13} , and R^9 representing C_{1-10} alkyl, C_{3-7} cycloalkyl, Aryl, HAR or Hetcy, said alkyl, cycloalkyl, Aryl groups and portions, HAR and Hetcy being optionally substituted with 1-4 R^{13} groups;

15 X represents CR^5R^6 , R^5 is $NR^{11}R^{12}$, and R^6 is selected from the group consisting of: R^1 , HAR, Hetcy and OR^{11} , wherein R^1 is as originally defined, R^{11} is R^1 or HAR, and R^{12} is C_{1-6} alkyl, Aryl or HAR, said Aryl and HAR being optionally substituted with 1-4 R^{13} groups, or R^{11} and R^{12} are taken in combination with the atom to which they are attached and represent a 5-6 membered ring optionally substituted with 1-2 R^{13} groups;

20 R^{13} is selected from the group consisting of: halo, C_{1-4} alkyl, C_{3-7} cycloalkyl, Aryl, HAR, Hetcy, and OR^{15} wherein R^{15} is H, said alkyl, cycloalkyl, Aryl, HAR and Hetcy being optionally substituted with 1-4 substituents selected from R^{18} and

R^{18} is halo, C_{1-4} alkyl, Aryl or CO_2C_{1-4} alkyl.

25

11. A compound in accordance with claim 1 selected from the group consisting of:
tert-butyl 3-cyano-2-[(2-ethylbutanoyl)amino]-5,6-dihydrothieno[2,3-b]pyridine-7(4H)-
carboxylate;
N-(3-cyano-7-isobutyl-4,5,6,7-tetrahydrothieno[2,3-b]pyridin-2-yl)-2-ethylbutanamide;
30 N-(3-cyano-7-isopropyl-4,5,6,7-tetrahydrothieno[2,3-b]pyridin-2-yl)-2-ethylbutanamide;
N-{6-[(4'-chloro-1,1'-biphenyl-4-yl)methyl]-3-cyano-4,5,6,7-tetrahydrothieno[2,3-c]pyridin-2-
yl}-2-ethylbutanamide;
N-[3-cyano-6-(4-phenoxybenzyl)-4,5,6,7-tetrahydrothieno[2,3-c]pyridin-2-yl]-2-
ethylbutanamide;

- N-{6-[4-(4-chlorophenoxy)benzyl]-3-cyano-4,5,6,7-tetrahydrothieno[2,3-c]pyridin-2-yl}-2-ethylbutanamide;
- N-[3-cyano-6-(3-phenoxybenzyl)-4,5,6,7-tetrahydrothieno[2,3-c]pyridin-2-yl]-2-ethylbutanamide;
- 5 N-(3-cyano-6-[[1-(2,4-dichlorophenyl)cyclopropyl]carbonyl]-4,5,6,7-tetrahydrothieno[2,3-c]pyridin-2-yl)-2-ethylbutanamide;
- N-[3-cyano-6-[(2,4-dichlorobenzyl)amino]-4,5,6,7-tetrahydro-1-benzothien-2-yl]-2-ethylbutanamide;
- N-[3-cyano-6-[(cyclopropylmethyl)(2,4-dichlorobenzyl)amino]-4,5,6,7-tetrahydro-1-benzothien-
- 10 2-yl]-2-ethylbutanamide;
- N-[3-cyano-6-[(2,4-dichlorobenzyl)(isopropyl)amino]-4,5,6,7-tetrahydro-1-benzothien-2-yl]-2-ethylbutanamide;
- N-[3-cyano-6-[(2,4-dichlorobenzyl)(isopentyl)amino]-4,5,6,7-tetrahydro-1-benzothien-2-yl]-2-ethylbutanamide;
- 15 N-[3-cyano-6-[(2,4-dichlorobenzyl)(3,3-dimethylbutyl)amino]-4,5,6,7-tetrahydro-1-benzothien-2-yl]-2-ethylbutanamide;
- N-[3-cyano-6-[(2,4-dichlorobenzyl)(isobutyl)amino]-4,5,6,7-tetrahydro-1-benzothien-2-yl]-2-ethylbutanamide;
- N-[3-cyano-6-[(2,4-dichlorobenzyl)(2-ethylbutyl)amino]-4,5,6,7-tetrahydro-1-benzothien-2-yl]-
- 20 2-ethylbutanamide;
- N-(3-cyano-6-[(2,4-dichlorobenzyl)[(4,5-dimethyl-2-furyl)methyl]amino]-4,5,6,7-tetrahydro-1-benzothien-2-yl)-2-ethylbutanamide;
- N-[3-cyano-6-[(2,4-dichlorobenzyl)(3-phenylpropyl)amino]-4,5,6,7-tetrahydro-1-benzothien-2-yl]-2-ethylbutanamide;
- 25 N-[6-[(1-benzofuran-2-ylmethyl)(2,4-dichlorobenzyl)amino]-3-cyano-4,5,6,7-tetrahydro-1-benzothien-2-yl]-2-ethylbutanamide;
- N-[3-cyano-6-[(2,4-dichlorobenzyl)(3,3,3-trifluoropropyl)amino]-4,5,6,7-tetrahydro-1-benzothien-2-yl]-2-ethylbutanamide;
- N-[3-cyano-6-[(2,4-dichlorobenzyl)(4-fluorobenzyl)amino]-4,5,6,7-tetrahydro-1-benzothien-2-
- 30 yl]-2-ethylbutanamide;
- N-[3-cyano-6-[(2,4-dichlorobenzyl)(tetrahydrofuran-2-ylmethyl)amino]-4,5,6,7-tetrahydro-1-benzothien-2-yl]-2-ethylbutanamide;
- N-(3-cyano-6-[(2,4-dichlorobenzyl)[(5-methyl-2-furyl)methyl]amino]-4,5,6,7-tetrahydro-1-benzothien-2-yl)-2-ethylbutanamide;

- tert-butyl (2S)-2-{{[3-cyano-2-[(2-ethylbutanoyl)amino]-4,5,6,7-tetrahydro-1-benzothien-6-yl](2,4-dichlorobenzyl)amino)methyl}pyrrolidine-1-carboxylate;
 N-{3-cyano-6-[(3,4-dichlorobenzyl)amino]-4,5,6,7-tetrahydro-1-benzothien-2-yl}-2-ethylbutanamide;
- 5 N-{3-cyano-6-[(3,4-dichlorobenzyl)(methyl)amino]-4,5,6,7-tetrahydro-1-benzothien-2-yl}-2-ethylbutanamide;
 N-(3-cyano-6-[[2-phenyl-1,3-thiazol-5-yl)methyl]amino)-4,5,6,7-tetrahydro-1-benzothien-2-yl)-2-ethylbutanamide;
 N-(3-cyano-6-{methyl[(2-phenyl-1,3-thiazol-5-yl)methyl]amino}-4,5,6,7-tetrahydro-1-
- 10 benzothien-2-yl)-2-ethylbutanamide;
 N-(3-cyano-6-[[2-phenyl-1,3-thiazol-4-yl)methyl]amino)-4,5,6,7-tetrahydro-1-benzothien-2-yl)-2-ethylbutanamide;
 N-(3-cyano-6-{methyl[(2-phenyl-1,3-thiazol-4-yl)methyl]amino}-4,5,6,7-tetrahydro-1-
- 15 benzothien-2-yl)-2-ethylbutanamide;
 N-[3-cyano-6-(1,2,3,4-tetrahydronaphthalen-1-ylamino)-4,5,6,7-tetrahydro-1-benzothien-2-yl]-2-ethylbutanamide;
 N-{3-cyano-6-[methyl(1,2,3,4-tetrahydronaphthalen-1-yl)amino]-4,5,6,7-tetrahydro-1-
- 20 benzothien-2-yl}-2-ethylbutanamide;
 N-{3-cyano-6-[(2,3-dihydro-1H-inden-1-yl)methyl]amino)-4,5,6,7-tetrahydro-1-benzothien-2-yl}-2-ethylbutanamide;
 N-{3-cyano-6-[(2,3-dihydro-1H-inden-1-yl)methyl](methyl)amino)-4,5,6,7-tetrahydro-1-
- 25 benzothien-2-yl}-2-ethylbutanamide;
 N-{6-[(2-chlorobenzyl)amino]-3-cyano-4,5,6,7-tetrahydro-1-benzothien-2-yl}-2-ethylbutanamide
 N-{6-[(2-chlorobenzyl)(methyl)amino]-3-cyano-4,5,6,7-tetrahydro-1-benzothien-2-yl}-2-
- 30 ethylbutanamide;
 N-(6-{[1-(4-bromophenyl)ethyl]amino}-3-cyano-4,5,6,7-tetrahydro-1-benzothien-2-yl)-2-ethylbutanamide;
 N-(6-[[1-(4-bromophenyl)ethyl](methyl)amino]-3-cyano-4,5,6,7-tetrahydro-1-benzothien-2-yl)-2-ethylbutanamide;
- N-[3-cyano-6-(3-phenylpyrrolidin-1-yl)-4,5,6,7-tetrahydro-1-benzothien-2-yl]-2-ethylbutanamide;
 N-[3-cyano-6-(4-phenylpiperazin-1-yl)-4,5,6,7-tetrahydro-1-benzothien-2-yl]-2-ethylbutanamide;
 N-{3-cyano-2-[(2-ethylbutanoyl)amino]-4,5,6,7-tetrahydro-1-benzothien-6-yl}-N-(2,4-dichlorobenzyl)-3,3-dimethylbutanamide;

- N-{3-cyano-2-[(2-ethylbutanoyl)amino]-4,5,6,7-tetrahydro-1-benzothien-6-yl}-N-[1-(hydroxymethyl)-2,2-dimethylpropyl]cyclopropanecarboxamide;
 N-{3-cyano-2-[(2-ethylbutanoyl)amino]-4,5,6,7-tetrahydro-1-benzothien-6-yl}-N-[1-(hydroxymethyl)-2,2-dimethylpropyl]-3,3-dimethylbutanamide;
 5 N-{3-cyano-2-[(2-ethylbutanoyl)amino]-4,5,6,7-tetrahydro-1-benzothien-6-yl}-N-[1-(hydroxymethyl)-2,2-dimethylpropyl]cyclopentanecarboxamide;
 N-{3-cyano-2-[(2-ethylbutanoyl)amino]-4,5,6,7-tetrahydro-1-benzothien-6-yl}-N-[1-(hydroxymethyl)-2,2-dimethylpropyl]benzamide and
 10 N-{3-cyano-2-[(2-ethylbutanoyl)amino]-4,5,6,7-tetrahydro-1-benzothien-6-yl}-N-[1-(hydroxymethyl)-2,2-dimethylpropyl]cyclohexanecarboxamide.

12. A pharmaceutical composition which is comprised of a compound in accordance with claim 1 in combination with a pharmaceutically acceptable carrier.

- 15 13. A method of treating type 2 diabetes mellitus in a mammalian patient in need of such treatment, comprising administering to said patient a compound in accordance with claim 1 in an amount that is effective to treat type 2 diabetes mellitus.

- 20 14. A method of preventing or delaying the onset of type 2 diabetes mellitus in a mammalian patient in need thereof, comprising administering to said patient a compound in accordance with claim 1 in an amount that is effective to prevent or delay the onset of type 2 diabetes mellitus.

- 25 15. A method of treating, preventing or delaying the onset of a disease or condition in a type 2 diabetes mellitus patient, said disease or condition being selected from the group consisting of: dyslipidemia selected from elevated serum cholesterol, elevated serum triglycerides, elevated serum low density lipoproteins and low levels of serum high density lipoprotein, microvascular or macrovascular changes and the sequellae of such conditions selected from coronary heart disease, stroke, peripheral vascular disease, hypertension, renal hypertension, nephropathy, neuropathy and retinopathy, said method comprising administering to
 30 the type 2 diabetic patient an amount of a compound of formula I that is effective for treating, preventing or delaying the onset of such diseases or conditions.